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Salubrious Effect of Tylophora Asthamatica on Paracetamol Hepatotoxicity

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Abstract. In this communication, we document the hepatoprotective effect of methonolic extract of *Tylophora asthmatica*. Over dosage of paracetamol induces hepatotoxicity. The data obtained in the present study illustrates asthmatica possess hepatoprotective effect an the paracetamol-induced hepatotoxicity in wister rats.

Keywords: *Tylophora asthmatica*, Hepatotoxicity, paracetamol

Query: (1) Ref. [7] is uncited. Please cite it in the text.

(2) "shivpuri *et al.*(1972)" is cited in the text, but not provided.

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1 Introduction

Paracetamol (Acetaminophen) is an antipyretic and analgesic drug that is available over the counter and overuse of paracetamol can cause overproduction of ROS during formation of N-acetyl-P-benzoquinoneimine (NAPQI) by cytochrome P450 [1]. This mecha-

nism has been suggested to participate in the development of oxidative stress and injury in paracetomal-induced hepatotoxicity [2].

Tylophora asthmatica, a wild indigenous plant indigenous plant, belongs to the family asclepiadaceous and is commonly called as Indian ipecae. It is an endangered plant species, endemic to the state of Tamilnadu in India. The powdered leaves, stems and root contain 0.2–0.3% alkaloid; of these Tylophorine, tylophorinine and tylophorinidine are important alkaloids. Various studies have confirmed the anti-inflammatory activity [3] direct stimulant of adrenal cortex [4] anti-asthmatic [shivpuri *et al.* 1972] and the treatment of bronchitis, rheumatism and dermatitis [5]. The extract from leaves and stems of *T. asthmatica* have been reported to possess antecedent, insecticide and antitumour properties [6].

The aim of the present study was to evaluate the hepato protective effect of the methanolic leaves extracts of tylophora asthmatica using rat model.

2 Materials and Methods

Adult healthy male wistar strain rats weighing 180 to 200 g were maintained under uniform laboratory conditions in standard steel cages and provided with food [Hindustan lever Ltd, Bangalore] and water ad libitum.

After two weeks the animals were grouped into 4, each group contains 6 animals. Group I animals well given normal saline and fed with standard diet serve as control. Group II animals were administered a single dose of paracetamol suspension [1 g kg^{-1} body weight, i.p.]. This dose is known to cause liver damage in animal received META extract [200 mg kg^{-1} body weight]. Group IV animals' co treated with META extract prior to induction of liver damage with 2ml of paracetamol suspension. On day 9 which in 36 hr after paracetamol treatment, all the animals well sacrificed and the blood

samples were collected for investigations. The animals were sacrificed by cervical dislocation after anesthesia. Liver was excised, weighed. WBC and RBC were counted in the whole blood. Blood urea and cholesterol were estimated using serum. Data are expressed as mean $\pm$ SD and subjected to Student's-*t* test for statistical significance at the level of significance $P \leq 0.05$ (Table 1).

Table 1: Effect of T. Asthmatic on Paracetamol Induced Hepatotoxicity.

Parameters	Group-I Control	Group-II Paracetamol	Group-III META	Group-IV Paracetomal META
Liver Weight (g)	3.6 ± 0.16	$2.7 \pm .16^*$	3.5 ± 0.16	$3.3 \pm 0.19^*$
WBC Count (Cells/cumm)	6055 ± 146	$6840 \pm 143^*$	$6720 \pm 104^*$	6090 ± 216
RBC Count (Cells/cumm)	$18,70,000 \pm 20,000$	$21,50,000 \pm 15,811^*$	$24,50,000 \pm 22,361^*$	$19,10,000 \pm 27,386^*$
Urea (mg/dl)	25.5 ± 0.86	$8.4 \pm 0.4^*$	25.8 ± 0.4	$19.9 \pm 0.63*$
Cholesterol (mg/dl)	102 ± 3.87	$135 \pm 3.39^*$	093 ± 3.39	$120 \pm 2.45^*$

* denotes statistical significance in comparison to the control at $p < 0.05$. Liver weight was determined by gravimetric method. WBC and RBC counts were by haemocytometric method. Urea was determined by DAM method and cholesterol was determined by wybenga and pilleggi.

From the Table 1, it is clear that T.asthmatica influences the activity of paracetamol at the organ, hematological and biochemical levels. The normal liver weight, which is 3.6 g, was decreased 2.7 g due to paracetamol toxicity. But when T.asthmatica is supplemented along with paracetamol, the liver weight raise up to 3.3 g.

In case of RBC and WBC the significant increase due to paracetamol treatment, from the normal value has been reduced back to almost normal conduction due to supplementation of T.asthmatica along with paracetamol. Due to paracetamol taxicity, a drastic decrease in the blood urea level from 25.5 mg/dl to 8.4 mg/dl is observed. META is able to increase the urea level [19.9 mg/dl] significantly. Similarly the normal cholesterol level, 102 mg/dl which is significantly increases up to 135 mg/dl due to paracetomal, it has been decreased to 120 mg/dl in group IV. Thus *T.asthmatica* seems to reduce the hepatotoxicity produced by the paracetomol. These need further confirmation with histopathological studies.

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